

REMARKS/ARGUMENTS

Claims 1-36 are pending in the present application. Claims 1, 12, 18, 29, and 34 are amended. Claims 4, 5, 6, 16, 21, 22, 23, 35, and 36 are canceled. Support for the amendments can be found in the claims as originally filed. Further support for the amendments to claims 1, 18, and 24 can be found in the specification, page 7, lines 3-14, and page 16 line 10. Further support for the amendments to claims 12 and 29 can be found in the specification, page 12, lines 14-22. Reconsideration of the claims is respectfully requested.

I. 35 U.S.C. § 101

The Examiner rejected claims 1-36 under 35 U.S.C. § 101 as directed towards non-statutory subject matter. This rejection is respectfully traversed. The Examiner states that:

Claims 1-36 are rejected under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter.

(a) Claim 1 defines non-statutory processes because as a whole, they merely present an abstract idea without any practical application that produces a useful, concrete and tangible result.

The claimed process, "dividing an object...; identifying similar blocks...; differentially compressing..." manipulates abstract ideas to result in an abstract construct (no tangible result), and fails to adequately reflect the described practical utility (no useful result).

(b) Claim 18 is the apparatus performs the method of claim 1, has the same type of issues as (a), therefore, is rejected under similar rationale. In addition, each of the means is reasonably interpreted in view of the specification as just software, the claimed system is not limited to embodiments which includes the hardware necessary to enable any underlying functionality to be realized, instead being software per se.

(c) Claim 34 has the same issues as (a) therefore, is rejected under similar rationale. Plus, the claims fail to fall within a category of patentable subject matter set forth in 35 U.S.C. 101. The specification, page 16, lines 7-18, defines "computer-readable medium" as including both storage media (i.e., memory) and communication media (i.e., wave, signal). A computer-readable medium including a carrier wave, or signal, is non-statutory subject matter as set forth in MPEP 2106 (IV)(B)(2)(a). As such, claim 34 is not limited to tangible embodiments, the claim is not limited to statutory subject matter and is therefore non-statutory.

Claims 2-17, 19-33, 35-36 are dependent upon claims 1, 18, 34, respectively, suffer from deficiencies similar to their respective base claims, and therefore are likewise rejected.

Office Action dated August 3, 2006, pp. 2-3.

Contrary to the Examiner's assertions, all claims comply with the standards presented in the MPEP and as required by *State Street*, *In re Lowry*, and *Warmerdam*. For example, amended claim 1 is as follows:

A method, in a data processing system, for reducing the size of an object, the method comprising:

- dividing an object into a plurality of blocks;
- identifying similar blocks within the plurality of blocks;
- differentially compressing the similar blocks;
- identifying identical blocks within the plurality of blocks;
- suppressing the identical blocks without differentially compressing the identical blocks;
- performing data compression on at least one block within the plurality of blocks, wherein the at least one block is not differentially compressed, wherein the at least one block is not suppressed, and wherein the step of performing data compression on the at least one block forms a reduced object; and
- storing the reduced object in a computer readable medium.

Claim 1 is directed to a computer implemented method *in a data processing system* for reducing the size of an object. The method includes the step of storing the reduced object in a computer readable medium. Thus, claim 1 is directed to a method that creates a concrete and tangible result in a data processing system.

Additionally, the Guidelines provide that:

To satisfy section 101 requirements, the claim must be for a practical application of the § 101 judicial exception, which can be identified in various ways:

The claimed invention “transforms” an article or physical object to a different state or thing.

The claimed invention otherwise produces a useful, concrete and tangible result, based on the factors discussed below.

Interim Guidelines of October 26, 2005, p.19. The Guidelines also provide that:

*The tangible requirement does not necessarily mean that a claim must either be tied to a particular machine or apparatus or must operate to change articles or materials to a different state or thing. However, the tangible requirement does require that the claim must recite more than a § 101 judicial exception, **in that the process claim must set forth a practical application of that § 101 judicial exception to produce a real-world result.*** Benson, 409 U.S. at 71-72, 175 USPQ at 676-77 (invention ineligible because had “no substantial practical application.”). “[A]n application of a law of nature or mathematical formula to a ... process may well be deserving of patent protection.” Diehr, 450 U.S. at 187, 209 USPQ at 8 (emphasis added); see also Corning, 56 U.S. (15 How.) at 268, 14 L.Ed. 683 (“It is for the discovery or invention of some practical method or means of producing a beneficial result or effect, that a patent is granted . . .”). In other words, the opposite meaning of “tangible” is “abstract.”

Interim Guidelines of October 26, 2005, pp. 20-21 (emphasis added).

Thus, the claims do not have to be tied to a particular machine or apparatus or operated to change articles or materials to a different state or thing. The only requirement is that the process claim must set forth a practical application to produce a real-world result. In the case of claim 1, the step of “storing the reduced object in a computer readable medium” provides the practical result. Accordingly, claim 1 meets the requirements of the Interim Guidelines with respect to patentability under 35 U.S.C. § 101. The same result occurs when the claims are compared to the underlying case law as when the claims are compared to the Guidelines.

Additionally, Applicants are under no requirement to recite *in the claims themselves* the purpose of the claimed invention. For example, the interim guidelines published by the PTO provide that:

Accordingly, *a complete disclosure* should contain some indication of the practical application for the claimed invention, i.e., why the applicant believes the claimed invention is useful.

Interim Guidelines of October 26, 2005, p. 4

The Guidelines provide that the *disclosure* should contain some indication of the practical application for the claimed invention. However, the practical application need not appear in the text of the claims. Instead, only features necessary to implement the practical application must appear in the text of the claims.

Regarding the other independent claims, claim 18 is directed to computer apparatus for reducing the size of an object. Claim 34 is directed to computer program product, in a computer readable medium, for reducing the size of an object and storing the reduced object in a computer readable medium. As explicitly provided in the case law and Guidelines cited above, both claims are statutory under 35 U.S.C. § 101.

All of the independent claims contain features which make the claims statutory under 35 U.S.C. § 101, as provided by the Guidelines and the standards of accepted case law. Accordingly, the rejection of claims 1-36 under 35 U.S.C. § 101 is in error and should be withdrawn.

II. 35 U.S.C. § 102, Asserted Anticipation

The Examiner rejected claims 1-3, 5, 6, 10, 15, 16, 18-20, 27, 32, and 34 as anticipated by *Trout et al.*, Method and Apparatus for Compressing Data, U.S. Patent No. 6,301,394 (Oct. 9, 2001) (hereinafter “*Trout*”). This rejection is respectfully traversed.

The Examiner states that:

Claims 1-3, 5, 6, 10, 15, 16, 18-20, 27, 32, 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Trout et al. (US Patent No. 6,301,394).

Trout anticipated independent claims 1, 18, 34 by the following:

As to claims 1, 18, 34, Trout teaches a method, in a data processing system, for reducing the size of an object, the method comprising:
dividing an object (i.e. data packets 70, col. 4, lines 55-58, Figs. 3A-3B) into a plurality of blocks (i.e. blocks 76-84, col. 4, lines 55-58, Figs. 3A-3B) (col. 4, line 46-64);
identifying similar blocks (i.e. analyzed to identify relationships between multiple data elements in the received data, col. 4, lines 11-14; the fourth word of each block in a particular data packet 70 is almost zero, col. 4, lines 55-64) within the plurality of blocks (col. 4, line 55 to col. 5, lines 33); and
differentially compressing (such as differential compression, col. 5, lines 11 - 17) the similar blocks to form a reduced object (col. 4, line 65 to col. 5, lines 33).

Office Action dated August 3, 2006, pp. 3-5.

A prior art reference anticipates the claimed invention under 35 U.S.C. § 102 only if every element of a claimed invention is identically shown in that single reference, arranged as they are in the claims. *In re Bond*, 910 F.2d 831, 832, 15 U.S.P.Q.2d 1566, 1567 (Fed. Cir. 1990). All limitations of the claimed invention must be considered when determining patentability. *In re Lowry*, 32 F.3d 1579, 1582, 32 U.S.P.Q.2d 1031, 1034 (Fed. Cir. 1994). Anticipation focuses on whether a claim reads on the product or process a prior art reference discloses, not on what the reference broadly teaches. *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 218 U.S.P.Q. 781 (Fed. Cir. 1983). In this case, each and every feature of the presently claimed invention is not identically shown in the cited reference, arranged as they are in the claims.

Amended claim 1 is as follows:

A method, in a data processing system, for reducing the size of an object, the method comprising:
dividing an object into a plurality of blocks;
identifying similar blocks within the plurality of blocks;
differentially compressing the similar blocks;
identifying identical blocks within the plurality of blocks;
suppressing the identical blocks without differentially compressing the identical blocks; and
performing data compression on at least one block within the plurality of blocks, wherein the at least one block is not differentially compressed, wherein the at least one block is not suppressed, and wherein the step of performing data compression on the at least one block forms a reduced object.

Trout does not teach dividing an object into a plurality of blocks, identifying identical blocks within the plurality of blocks, and suppressing the identical blocks *without* differentially compressing the identical blocks. In contrast, *Trout* teaches:

An apparatus and method for compressing data is disclosed. The apparatus and method comprise: 1) analysis of the data to identify a relationship between a plurality of data elements in the data, 2) reordering the data based on the identified relationship between the plurality of data elements, and 3) identifying common sequences in the reordered data

and storing these references using a lean index. The apparatus and method of the present invention further includes reordering the data to arrange related data elements adjacent to one another, and compressing the reordered data to generate a compressed data set.

Trout, Abstract.

Trout analyzes data to identify relationships between the data elements, reorders the data based on the identified relationships, identifies common sequences in the reordered data, and stores references to the common sequences using a lean index. *Trout*, Abstract. *Trout* does not anticipate the invention of claim 1 because *Trout* fails to teach the claimed feature of suppressing the identical blocks without differential compression. This feature was previously in claim 4, which originally depended from claim 1, but now has been incorporated into amended claim 1. The Examiner appears to admit that *Trout* fails to explicitly teach the claimed feature of suppressing the identical blocks without differential compression. Additionally, *Trout* does not actually teach this claimed feature. In fact, the word “suppress” does not appear anywhere in *Trout*. Therefore, *Trout* does not anticipate the invention of claim 1.

Independent claims 18 and 34 contain features similar to those presented in claim 1. Therefore, *Trout* does not anticipate independent claims 18 and 34 for the same reasons presented vis-à-vis the response to the rejection of claim 1. Additionally, dependent claims 2, 3, 10, 15, 16 depend from independent claim 1, and dependent claims 19, 20, 27, and 32 depend from independent claim 12. Therefore, *Trout* does not anticipate the dependent claims at least by virtue of their dependence on the independent claims. Accordingly, the rejection of claims 1-3, 5, 6, 10, 15, 16, 18-20, 27, 32, and 34 has been overcome.

Furthermore, *Trout* does not teach, suggest, or give any incentive to make the needed changes to reach the presently claimed invention. *Trout* actually teaches away from the presently claimed invention because it teaches “*reordering the data* to form a reordered data set”. *Trout*, claim 1. In contrast, the present invention does not reorder the data as part of reducing the size of an object. Because reordering the data is a key step of *Trout*’s method, one of ordinary skill in the art would not be led to modify *Trout* by removing this key step to reach the present invention. Absent some teaching, suggestion, or incentive to modify *Trout* in this manner, the presently claimed invention can be reached only through an improper use of hindsight using the Applicants’ disclosure as a template to make the necessary changes to reach the claimed invention.

III. 35 U.S.C. § 103, Asserted Obviousness

III.A. The Examiner Has Failed to State A *Prima Facie* Obviousness Rejection

If the Patent Office does not produce a *prima facie* case of unpatentability, then without more, the Applicants are entitled to the grant of a patent. *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Grabiak*, 769 F.2d 729, 733, 226 U.S.P.Q. 870, 873 (Fed. Cir. 1985). A *prima facie* case of obviousness is established when the teachings of the prior art itself suggest the claimed subject matter to a person of ordinary skill in the art. *In re Bell*, 991 F.2d 781, 783, 26 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1993). All limitations of the claimed invention must be considered when determining patentability. *In re Lowry*, 32 F.3d 1579, 1582, 32 U.S.P.Q.2d 1031, 1034 (Fed. Cir. 1994). A proper *prima facie* case of obviousness cannot be established by combining the teachings of the prior art absent some teaching, incentive, or suggestion supporting the combination. *In re Napier*, 55 F.3d 610, 613, 34 U.S.P.Q.2d 1782, 1784 (Fed. Cir. 1995); *In re Bond*, 910 F.2d 831, 834, 15 U.S.P.Q.2d 1566, 1568 (Fed. Cir. 1990).

III.A.1 The Examiner Cannot State a *Prima Facie* Obviousness Rejection for Claims 4, 21, and 35

Applicants have cancelled claims 4, 21, and 35, rendering any rejections of claims 4, 21 and 35 moot. However, because what was claimed in claims 4, 21, and 35 has been incorporated into claims 1, 18, and 34, Applicants address the Examiner's arguments regarding claims 4, 21 and 35 to show that the Examiner cannot sustain state a *prima facie* obviousness rejection for amended claims 1, 18, and 34 in view of *Trout* and the other cited references.

III.A.2 The Proposed Combination Changes the Principle of Operation of the Primary Reference

Regarding amended claim 1, the Examiner cannot state a *prima facie* obviousness rejection because the proposed combination would change the principle of operation of the primary reference. In combining references to show the claimed feature, the proposed modification cannot change the principle of operation of a reference. See *In re Ratti*, 270 F.2d 810, 123 (CCPA 1959) and MPEP 2143.01. If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *Id.*

Specifically, *Trout* teaches reordering the data. *Trout*, Abstract. *Krapp* teaches obtaining a first block identifier for a first data block. *Krapp*, Abstract. If, after applying *Krapp*'s step of obtaining a first block identifier for a first data block, *Trout*'s step of reordering the data is executed, the first block identifier is rendered meaningless. Therefore, the proposed modification would require that *Trout*'s step

of reordering data not be performed, changing the principle of operation of *Trout*. For this reason, the teachings of the references are not sufficient to render claim 1 *prima facie* obvious.

Claims 18 and 34 implement an apparatus and a computer program product of the method of claim 1, respectively. Therefore, the same arguments made for claim 1 may be made for claims 18 and 34. Therefore, the Examiner cannot state a *prima facie* obviousness rejection for claims 1, 18, and 34.

III.B. The Examiner Has Failed to State a *Prima Facie* Obviousness Rejection for Claims 11 and 28

The Examiner has rejected claims 11 and 28 as unpatentable over *Trout*, in view of *Bentley et al.*, Method and Apparatus for Data Compression Using Fingerprinting, U.S. Patent No. 6,611,213 (Aug. 26, 2003) (hereinafter “*Bentley*”). This rejection is respectfully traversed.

The Examiner states that:

As to claims 11, 28, *Trout* does not expressly teach identifying one or more features includes calculating one or more fingerprints for the plurality of blocks. *Bentley* teaches identifying one or more features includes calculating one or more fingerprints for the plurality of blocks (i.e. several blocks match the current fingerprint, col. 8, lines 1-18). It would have been obvious to one of ordinary skill of the art having the teaching of *Trout* and *Bentley* at the time the invention was made to modify the system of *Trout* to include identifying one or more features includes calculating one or more fingerprints for the plurality of blocks as taught by *Bentley*. One of ordinary skill in the art would be motivated to make this combination in order to encode the largest match blocks in view of *Bentley*, as doing so would give the added benefit of improving the capacity and use of such data storage and communications systems as taught by *Bentley* (col. 1, lines 1-9).

Office Action dated August 3, 2006, page 6.

III.B.1. The Proposed Combination Fails to Teach All of the Features of the Dependent Claims

As described above, *Trout* does not teach the feature of, “suppressing the identical blocks without differential compression”, as recited in the independent claims as amended. For this reason alone, *Trout* does not teach all of the features of claims 11 and 28, and the Examiner cannot state a *prima facie* obviousness rejection against claims 11 and 28 as amended.

Similarly, *Bentley* does not teach the feature of, “suppressing the identical blocks without differential compression”, as recited in the independent claims. *Bentley* teaches a method and apparatus for data compression using fingerprinting. *Bentley*, Title. *Bentley*’s method and apparatus teach pre-processing and encoding an input stream *prior* to applying a compression scheme. *Bentley*, Abstract. The encoded data stream is compressed using any well known compression algorithm. *Bentley*, col. 8, lines 1-18.

Therefore, *Bentley* does not teach suppressing the identical blocks without differential compression. For this reason, *Bentley* does not teach all of the features of claims 11 and 28, and the Examiner has failed to state a *prima facie* obviousness rejection for claims 11 and 28.

Therefore, the proposed combination of *Trout* and *Bentley*, when considered together as a whole, does not teach or suggest all of the features of claims 11 and 28. For this reason, the Examiner has failed to state a *prima facie* obviousness rejection against claims 11 and 28 as amended.

III.B.2. The Proposed Combination Does Not Result in the Invention of Claim 11 or Claim 28

The proposed combination of *Trout* and *Bentley* does not result in the invention of claim 11 or claim 28. Claim 11 is as follows:

11. (Original) The method of claim 10, wherein identifying one or more features includes calculating one or more fingerprints for the plurality of blocks.

Claim 10 is as follows:

10. (Original) The method of claim 1, wherein identifying similar blocks includes identifying one or more features of the plurality of blocks.

Thus, claim 11, by virtue of depending from claim 1, provides a computer implemented method for reducing the size of an object, the method comprising, *inter alia*, differentially compressing similar blocks; suppressing identical blocks without differential compression; performing data compression on at least one block within the plurality of blocks that is not differentially compressed or suppressed, and calculating one or more fingerprints for the plurality of blocks.

In contrast, *Trout* provides an apparatus and method for *compressing* data. *Trout*, Abstract. *Trout*'s method for compressing data includes the step of "reordering the data to form a reordered data set based on the identified relationship between the plurality of data elements", followed by the step of "identifying common sequences in the reordered data set". *Trout*, claim 1.

Bentley teaches a method and apparatus for data *compression* using fingerprinting. *Bentley*, Title. *Bentley* achieves relatively low compression ratios by using a longer history and longer common strings in the initial evaluation of the input data, prior to applying a particular compression process. *Bentley*, Abstract. *Bentley*'s method and apparatus are concerned only with pre-processing and encoding the input stream *prior* to applying a compression scheme. *Bentley*, Abstract. The encoded data stream is compressed using any well known compression algorithm, such as Lempel-Zev compression. *Bentley*, col. 8, lines 1-18.

Thus, *Trout* and *Bentley* each take different approaches to *compressing data*. *Trout* reorders the data and identifies common sequences in the reordered data, while *Bentley* uses longer history and longer

common strings. The Examiner's proposed combination of these two does not result in the invention of claim 11.

First, as previously discussed, neither *Trout* nor *Bentley* teaches the claimed feature of suppressing the identical blocks without differential compression. *Trout* and *Bentley* teach methods of *compressing* data and make no mention of *suppressing* identical blocks. Moreover, *Trout* and *Bentley* do not mention suppressing identical blocks *without* differential compression. Therefore, the proposed combination does not result in the invention of claim 11.

Second, the Examiner does not adequately explain how the proposed combination would successfully operate. *Bentley* divides input data into a series of blocks, computes and stores a fingerprint for each block, and compares a particular set of characters of the input stream with the computed fingerprints. *Bentley*, Abstract. If, after applying *Bentley's* method the input data is subsequently reordered as per *Trout's* method, the resulting data would make *Bentley's* stored fingerprints useless because the input data has changed. Therefore, the proposed combination does not result in the invention of claim 11.

Claims 28 implements an apparatus of the method of claim 11. Therefore, the same arguments made for claim 11 may be made for claim 28. Therefore, the Examiner's proposed combination of *Trout* and *Bentley* does not result in the invention of claim 11 or claim 28. Therefore, the Examiner has failed to state a *prima facie* obviousness rejection against claims 11 and 28.

III.C The Examiner Has Failed to State a *Prima Facie* Obviousness Rejection For Claims 12 and 29

The Examiner has rejected claims 12 and 29 as unpatentable over *Trout*, in view of *Bentley*, and in view of *Burrows et al.*, Technique For Deleting Duplicate Records Referenced In An Index Of A Database, U.S. Patent No. 6,745,194 (June 1, 2004) (hereinafter "*Burrows*"). This rejection is respectfully traversed.

The Examiner states that:

Claims 12, 29 rejected under 35 U.S.C. 103(a) as being unpatentable over *Trout et al.* (US Patent No. 6,301,394), in view of *Bentley et al.* (US Patent No. 6,611,213), and further in view of *Burrows et al.* (US Patent No. 6,745,194).

As to claims 12, 29, *Trout* and *Bentley* do not expressly teach calculating super fingerprints for the one or more fingerprints; and comparing super fingerprints of the plurality of blocks to determine common features. However, *Burrows* teaches calculating super fingerprints for the one or more fingerprints; and comparing super fingerprints of the plurality of blocks to determine common features (i.e. The FINGERPRINT 255 represents the entire content of the page. The fingerprint 255 can be produced by applying one-way polynomial functions to the digitized content, col. 8, lines 27-34).

III.C.1. The Proposed Combination Does Not Result in the Invention of Claims 12 and 29

Neither *Trout*, *Bentley*, nor *Burrows* individually or in combination teach the feature of, “*suppressing* the identical blocks without differential compression”, as recited in the independent claims. For this reason, the combination of *Trout*, *Bentley*, and *Burrows* does not teach all of the features of claims 12 and 29. Therefore, the proposed combination of these references when considered together as a whole does not teach or suggest all of the features of claims 12 and 29, and the Examiner has failed to state a *prima facie* obviousness rejection against claims 12 and 29.

Claim 12 is as follows:

12. (Currently Amended) The method of claim 11, wherein identifying similar blocks further includes:
 - merging the one or more fingerprints for the plurality of blocks to form one or more fingerprint groups;
 - calculating super fingerprints for the one or more fingerprint groups; and
 - comparing super fingerprints to determine common features.

Moreover, the Examiner appears to be confusing fingerprint with super fingerprint. In the invention of claim 12, a super fingerprint is calculated for one or more fingerprint groups, where the fingerprint groups are formed by merging one or more fingerprints. The invention of claim 12 identifies similar blocks by comparing super fingerprints to determine common features.

In contrast, in *Burrows*, “[f]ingerprinting techniques ensure that duplicate pages having *identical content* have *identical fingerprints*.” *Burrows*, col. 8, lines 30-32. First, *Burrows* makes no mention of calculating *super fingerprints* for the one or more *fingerprint groups*. Second, the fingerprints in *Burrows* are used to determine duplicate pages having *identical* content, unlike super fingerprints, which are used to determine *common* features. Thus, the Examiner’s proposed combination of *Trout*, *Bentley*, and *Burrows* does not result in the invention of claim 12.

Claim 29 implements an apparatus of the method of claim 12. Therefore, the same arguments made for claim 12 may be made for claim 29. Therefore, the Examiner has failed to state a *prima facie* obviousness rejection against claims 12 and 29.

IV. Conclusion

The proposed combinations of various references do not result in the inventions of the claims. Therefore, the Examiner cannot state a *prima facie* obviousness rejection against the claims 4, 13, 14, 21, 22, 23, 30, 31, 35, and 36. The subject application is patentable over the cited references and should now be in condition for allowance. The Examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the Examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

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Respectfully submitted,

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